

File Code: 1940 Monitoring

Date: 3/23/17

To: Yellowstone District Ranger

Subject: Boones Peak Rx Burn Implementation Monitoring Review – 5 Years Post Implementation

IMPLEMENTATION REVIEW DATE AND PARTICIPANTS

On August 2nd, 2016 a 5-year post project Implementation Monitoring Review was held to evaluate the Boones Peak Prescribed Burn on the Yellowstone Ranger District. The burn was accomplished in a prescription burn window on September 20th through 25th of 2011. Monitoring Review attendees included Alex Sienkiewicz, Ashley Sites, Joe Barnett, Andy Kelher, and Dale White.

OBJECTIVES

On October 18, 2012 a 1-year post project Implementation Monitoring Review was held to evaluate the Boones Peak Prescribed Burn implementation on the Yellowstone Ranger District. The current review was conducted to provide information on how well long term goals are being met. The burn was authorized in the Long Mountain Fuels Management and Prescribed Burning Project Decision Memo on July 9, 2004. Overall project objectives included the following:

1. reduce conifer encroachment on native grass and sagebrush meadows and aspen stands;
2. restore/maintain fire regime condition class 1 areas;
3. increase public and firefighter safety during wildfire events; and,
4. respond to hazardous fuels reduction and restoration elements of the National Fire Plan.

Additional goals and objectives listed in the Long Mountain Hazardous Fuels Reduction – Boones Peak Prescribed Fire Plan included:

5. provide and/or maintain existing defensible spaces within the drainage to facilitate fire suppression tactic and staging areas during wildfire events;
6. reduce current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, particularly under forest canopies;
7. reduce the amount of understory vegetation and the available natural fuel loading in the 0-3" size class;
8. utilize mixed intensity burning to produce a mosaic pattern of burned and unburned areas; and,
9. retain patches of healthy sagebrush by excluding fire in those areas.

APPLIED TREATMENTS

The Boones Peak unit of the Elk Creek project area included 27 treatment stands totaling approximately 892 acres on the north side of Long Mountain (T3S, R13E, Sections 25-29, 33-36). Approximately 170 acres within 10 stands of conifer and aspen were treated by prescribed burning only. Approximately 157 acres within 2 units of conifer and aspen were treated by slashing of both conifers and aspen. Approximately 426 acres in 12 stands were treated by slashing of small-diameter conifer (1/2 to 8 inches in diameter) followed by prescribed burning. Other treatments included the cutting down (slashing) of

small-diameter conifer trees (1/2 to 8 inches in diameter) encroaching on 3 grass and shrub habitat habitats prior to broadcast burning on approximately 139 acres. All treatment stands were treated with prescribed fire.

EVALUATION PROTOCOL

This review consisted of the following actions.

1. Identification and listing of the prescribed fire plan objectives and the mitigation measures (sources included the Long Mountain Burn Project Decision Memo and Burn Plan)
2. Field review of the burn units
3. Team ratings (consensus) for effectiveness of objectives and the mitigation measures observed at the reviewed units, using the Custer Gallatin NF implementation monitoring format
4. Team recommendations for future CGNF prescribed burn projects

Effectiveness of Project Objectives and Mitigation Measures was rated using a modified form of the Forestry Best Management Practice (BMP) review protocol developed by the Montana DNRC. Effectiveness was rated using the following scoring system:

Effectiveness	4 points: <u>Objective:</u> Completely met <u>Mitigation Measure:</u> Adequate Protection of resources, effective
	3 points: <u>Objective:</u> Substantially met <u>Mitigation Measure:</u> Minor & temporary impacts on resources, moderately effective
	2 points: <u>Objective:</u> Partially or minimally met <u>Mitigation Measure:</u> Major & temporary or minor & prolonged impacts on resources, slightly effective
	1 point: <u>Objective:</u> Not met at all <u>Mitigation Measure:</u> Major and prolonged impacts on resources, not effective

Project Monitoring Activities were presented in the Decision Memo as non-mandatory project components. The Decision Memo stated that: “the following monitoring activities *could be* applied by the Forest Service as part of my decision.” Since the monitoring activities were introduced in this manner, the review team did not rate them in the same fashion as the required project objectives and goals discussed above. Instead, the monitoring activities were listed and comments were compiled regarding whether, and to what extent, the activities were completed.

EVALUATION WORKSHEET

Evaluation Items - BMP's	Source	Effect	Comments
1) Reduce conifer encroachment on grass and sagebrush meadows and aspen stands	Boones Peak Prescribed Fire Plan p.7	4	
2) Provide and/or maintain existing defensible spaces within the	Boones Peak Prescribed Fire Plan p.7	4	Post-fire effectiveness was rated as 3. This score had increased to 4 in 2016

drainage to facilitate tactic and staging areas during wildfire events			based on delayed tree mortality.
3) Reduce current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, particularly under mature forest canopies	Boones Peak Prescribed Fire Plan p.7	3	Post-fire effectiveness was rated as 4. This score had fallen to 3 in 2016 based on robust regrowth of herbaceous understory.
4) Restore/maintain fire regime condition class 1 area	Boones Peak Prescribed Fire Plan p.7	4	
5) Reduce the amount of understory vegetation and available natural fuel loading in the 0-3" size class	Boones Peak Prescribed Fire Plan p.8	4	
6) Allow an opportunity for wildland fire in a natural role in the upper portions of the Elk Creek drainage, thus reducing the threat to private land developments located in the lower portion of the drainage	Boones Peak Prescribed Fire Plan p.8	4	Fallen dead trees and lush grass and shrub growth are beginning to affect this rating item negatively.
7) Mixed intensity fires of a combination of underburning and small isolated pockets of torching trees to create a mosaic pattern of burned and unburned areas.	Boones Peak Prescribed Fire Plan p.8	4	The mosaic of burned and unburned areas has led to a mosaic of regrowth situations including areas of dense aspen regeneration, conifer regeneration, and lush herbaceous growth.
8) Aspen stands determined to benefit from a prescribed burning treatment may be fenced or have conifers felled in them, either before or after burning, in order to provide protection against big game browsing.	Long Mountain Decision Memo p. 11	NA	Not done. In 2016 it was determined that this action was not necessary, as new aspen growth greatly outpaced any detrimental impacts from cattle or wild ungulates.

Evaluation Items - Monitoring	Comments
<p>1) <u>The following monitoring activities <i>could be</i> applied by the FS as part of my decision:</u> Photographic reference points established throughout the project areas prior to burning to provide baseline information w.r.t. effectiveness of fuel treatments, vegetative recovery, and post burn effects.</p>	<p>Photo points were not set up prior to the burn</p>
<p>2) <u>The following monitoring activities <i>could be</i> applied by the FS as part of my decision:</u> The range specialist would monitor known noxious weed locations after burning to determine if infestations are spreading due to the burning. Surveys would occur for the first 3 years after burning. Post-fire treatment may be necessary in accordance with the GNF Noxious Weeds EIS.</p>	<p>All equipment was weed-washed prior to the burn. The district monitored and treated equipment travel routes (but not the entire burn area) for noxious weeds and sprayed as necessary for 3 years post-project. Based on 2016 survey, which noted large amounts of thistle present within burned areas, additional weed control by biological control and/or spraying is being considered.</p>

PHOTOGRAPHS

(Note: the following 2012 and 2016 photos were taken in similar areas but not at identical locations)

Low/Moderate Intensity Burn



October 2012



August 2016

Moderate/High Intensity Burn



October 2012



August 2016

Moderate/High Intensity Burn adjacent to Aspen Stand



October 2012



August 2016

Large, South-Facing Aspen Stand



October 2012



August 2016

OBSERVATIONS

1. Significant delayed mortality occurred after the 2012 Implementation Review.
2. Herbaceous understory growth was extremely lush in 2016. This may be partly due to the north aspect of most of the areas examined.
3. Elk and Canada thistle were prevalent, and grew thickly, in the understory of many of the burned areas examined. All equipment was weed-washed prior to the burn, and it is apparent that the weed seed source was present in the area prior to the 2011 burn.

CONCLUSIONS

1. The review team consensus is that the project work reviewed was successful in meeting the following project objectives.
 - reducing conifer encroachment on native grass and sagebrush meadows and aspen stands(through low and low/moderate burning in these areas);
 - restoring/maintaining fire regime condition class 1 areas (short-term improvement through burning of grass and shrubs, long term improvement through removal of ground-surface fuels and trees);
 - responding to hazardous fuels reduction and restoration elements of the National Fire Plan and increasing public and firefighter safety during wildfire events
 - providing and/or maintaining existing defensible spaces within the drainage to facilitate fire suppression tactic and staging areas during wildfire events;
 - reducing current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, (although fallen dead trees and lush grass and shrub growth are beginning to affect this issue negatively); and,
 - utilizing mixed intensity burning to produce a mosaic pattern of burned and unburned areas which in the five years since the burn have become a mosaic of vegetative regeneration situations.
2. The burn appears to have greatly exacerbated existing Elk and Canada thistle infestation within the project area.

RECOMMENDATIONS

Refer to the October 18, 2012 Boones Peak Prescribed Burn Implementation Monitoring Review for recommendations made at that time.

There is one additional recommendation based on this 2016 review. As noted previously, Elk and Canada thistle were prevalent in the understory of many of the burned areas examined and appear to have spread significantly and thrived after the burn. In the future it is recommended that local weed infestation and predicted effects of burning on the infestation be considered carefully during the prescribed burn planning process. Characteristics such as pre-burn prevalence of weeds and the species/characteristics of existing weed species in the area (e.g., are the seeds wind-dispersed?) should be considered. Based on the predicted effects of burning on weed populations, consider including

mitigations such as intensive pre- and post-treatment of weeds or establishing no-burn zones in areas where burning is likely to exacerbate weed problems in an unacceptable manner.

Dale White
Forest Hydrologist